REMARKS

Claim Rejections

Claims 1-5 are rejected under 35 U.S.C. §102(a) and (e) as being anticipated by Berenbaum et al. (6,658,551).

Claim Amendments

By this Amendment, Applicant has amended claim 1 of this application to better protect what Applicant regards as the invention. It is believed that the amended claims specifically set forth each element of Applicant's invention in full compliance with 35 U.S.C. § 112, and define subject matter that is patentably distinguishable over the cited prior art.

The amended claims are directed toward: a method for inter-cluster communication that employs register permutation, where clustered functional units have some global registers, and the said clustered functional units exchange data, without actual data movement, by exchanging data between the said global registers of each cluster *by permuting through crossbar switches*.

Berenbaum et al. disclose a multithreaded VLIW processor with splittable VLIW packets. Partial (i.e., split) packets from distinct threads can be dispatched to and executed by the functional units concurrently. In a multithreaded processor, each thread has an independent register file and, thus, an input crossbar (for register reads) and an output crossbar (for register writes) are placed at the inputs and outputs of functional units, accordingly. A functional unit can retrieve its operands from the corresponding register file of the program thread and write the result back to that register file through the two crossbar switches.

In comparison, Applicant teaches a method of data communication between multiple independent functional unit groups (said "clusters") for a single program thread where data cannot be exchanged directly (i.e., data cannot be transferred directly between functional units in different clusters just by accessing a common register). In Applicant's invention, a cluster possesses a local (private) register file and a global (public) register file, respectively, and the clusters exchange data by permuting the global register files without actual data movements. It is important to note that crossbar switches are employed in the permutation of the global register

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files. In comparison, in Berenbaum et al. the crossbar switches are included for functional units to read from and write to the independent register files of the corresponding program threads. In other words, the ***inter-thread communication*** (i.e., the communications between register files) is not performed through the crossbars.

It follows that Berenbaum et al. do not teach: a method for inter-cluster communication that employs register permutation, where clustered functional units have some global registers, and the said clustered functional units exchange data, without actual data movement, by exchanging data between the said global registers of each cluster by permuting through crossbar switches.

It is axiomatic in U.S. patent law that, in order for a reference to anticipate a claimed method, it must clearly disclose each and every feature of the claimed method. Applicant submits that it is abundantly clear, as discussed above, that Berenbaum et al. do not disclose each and every feature of Applicant's amended claims and, therefore, could not possibly anticipate these claims under 35 U.S.C. § 102. Absent a specific showing of these features, Berenbaum et al. cannot be said to anticipate any of Applicant's amended claims under 35 U.S.C. § 102.

It is further submitted that Berenbaum et al. do not disclose, or suggest any modification of the specifically disclosed structures that would lead one having ordinary skill in the art to arrive at Applicant's claimed method. Thus, it is not believed that Balmer et al. renders obvious any of Applicant's amended claims under 35 U.S.C. § 103.
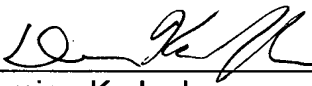
Summary

In view of the foregoing amendments and remarks, Applicant submits that this application is now in condition for allowance and such action is respectfully requested. Should any points remain in issue, which the Examiner feels could best be resolved by either a personal or a telephone interview, it is urged that Applicant's local attorney be contacted at the exchange listed below.

Respectfully submitted,

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